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ABSTRACT

Self-report research has inconclusively linked complaints of poor memory functioning, memory performance, and intellectual ability with depression in older adults. In order to investigate more conclusively the correlation between these variables as well as to investigate the effect of age differences, 159 older adults (49 young-old, aged 55-70; 60 old-old, aged 71-84) were administered a battery of memory, intelligence, and depression scales. Memory was assessed through immediate and delayed recall tests as well as with subscales of the Metamemory Questionnaire. Intellectual ability in terms of recognition vocabulary, figure rotation, and letter/word series (adapted from the Primary Mental Abilities Tests on verbal meaning, space and reasoning) was assessed by corresponding subtests of the Adult Mental Abilities test. Depression was measured by the Zung Depression Scale. An analysis of the results showed that older people who complained of memory problems had high levels of depression. Further, the bidirectional relationship that ensued between affect and cognition points to the circular pattern that develops between memory and depression once the first causal step is taken. Finally, the heterogeneous lifestyle of young-old adults (55-70) appeared to be related to the differences in psychological functioning in this age group. By contrast, old-old adults (71-84) appeared to be more homogeneous because of the commonalities of old age. (Figures illustrating variable linkages are appended). (BL)

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MEMORY COMPLAINT AND MOOD IN THE ELDERLY: A NEW WRINKLE

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Memory Complaint and Mood in the Elderly: A New Wrinkle

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We are going to discuss a study examining the relationship between self-reports of memory functioning, memory performance, intellectual ability, and symptomatic depression in young-old and old-old adults. While earlier work has looked at some or all of the relationships among these variables, two problems in particular make conclusions difficult. The first is the way self-reported memory functioning has been measured. Assessment approaches have ranged from anecdotal information provided by subjects (e.g. Cronholm & Ottosson, 1961) and responses to open-ended questions such as: "Do you have any trouble with your memory?" (Kahn, Zarit, Hilbert, & Niederehe, 1975) to questionnaires using Likert scales and tapping multiple dimensions of memory functioning (Bennett-Levy & Powell, 1980; Herrmann & Neisser, 1978; Zarit, Cole & Guider, 1981; Zarit, Gallagher, & Kramer, 1981; Zelinski, Gilewski, & Thompson, 1980).

A second problem with the literature on self-reports of memory functioning has been the nature of the population studied. Studies with clinical populations have indicated that self-reports of memory functioning have a much stronger relationship with depression than with any other factor (e.g. Kahn et al., 1975). On the other hand, studies using nonclinical samples have found a strong relationship between self-reported memory functioning and memory performance (e.g. Zelinski et al., 1980). Prior research has also demonstrated a significant relationship between self-reported memory and intellectual ability or general cognitive functioning in nonclinical samples (e.g. Friedman, 1964), but not in clinical ones (e.g. Kahn et al., 1975).

Paper presented at the annual meeting of the American Psychological Association, Washington, DC, August 1982.

In order to resolve the conflicting findings mentioned here, we studied responses from a nonclinical sample of older adults to a questionnaire tapping self-assessed memory function, a self-administered scale measuring symptomatic depression, subtests from an intelligence test, and their alternate forms, and battery of memory tests.

In addition, we decided to investigate age differences between young-old people, i.e. those aged 55-70, and old-old people, i.e. those aged 71-84, because in some studies young-old people have performe. like young adults on some tasks and like old-old adults on others. This has been observed for all four of the variables relevant to our work [1) depression rates (Gurland, Dean, Cross, & Golden, 1980; Weissman & Myers, 1978a, 1978b), 2) memory ability (Zelinski, 1979; Zelinski, Walsh, & Thompson, 1978), 3) intelligence (Schaie, 1982), and 4) self-reported memory functioning (Zelinski, Gilewski, & Thompson, Note 1)].

The methodology used in this study involved analysis of latent variables, i.e. variables or factors determined by multiple measures. The procedure, known as LISREL (the analysis of linear structural relationships) focuses on determining strength of interrelationships between the factors, consisting of unidirectional paths signifying unidirectional relationships and bidirectional paths indicating covariances. Unidirectional paths are an attempt to posit causality. Structural modeling approaches control for confounding variables first by measuring their effects and then by partialling them out. This is similar in principle to the experimental approach whereby experimental control is used to eliminate or reduce the effects of confounds in attempting to determine causality.

The first figure in your handout indicates the major hypothesis investigated.

Figure 1 About Here

All factors were expected to predict self-reported memory functioning, but it was uncertain what the relative sizes of these paths would be. The prediction paths are based upon previous findings for the relevant variables found in the literature. Thus the path from depression to intelligence and memory performance suggests that lower performance would be expected from those with higher depression scores, as summarized by Miller (1975). The covariance between memory and intelligence is based on the premise that memory is typically included as a component of most models of intelligence (e.g. Guilford, 1967). We assign a bidirectional relationship between memory performance and intelligence because they are related, but the directional nature of the relationship is not germane to the research. Finally, the paths from depression, intelligence, and memory performance to self-reported memory are based on the literature cited earlier.

An alternative hypothesis is presented at the bottom of Figure 1. The only difference between the major and alternative hypotheses is the place of self-reported memory functioning in the model. The first model posited this factor to be predicted by the other three. In the alternative model, self-reported memory functioning predicts depression, memory performance and intellectual ability. This hypothesis is compatible with Poon, Fozard, and Treat's (1978) view that self-perceptions of memory functioning can affect performance on ability tasks.

The main purpose of the alternative hypothesis is to provide confirmation or disconfirmation of our major hypothesis. If the alternative model fits less well than the hypothesized model, further support would be gathered for our hypothesis that depression, memory performance, and intellectual ability predict self-reported memory functioning. That is, people's assessment of their memory functioning is the result of their awareness of their ability as well as mood. If the alternative hypothesis fits the data better, self-reports of memory functioning would be shown to be a predictor rather than an effect of depression and the performance factors. If both models fit equally well, the relationship

between self-rating of functioning and depression and between self-rating and performance would be shown to be reciprocal,

Method

Individuals in this study were participants in the first phase of a short-term longitudinal study of psychological abilities and age. All were members of a health maintenance organization in Southern California. Data for the present analyses came from individuals who volunteered for the main study and later returned to participate in an additional study of memory. Ninety-nin of the subjects were young-old, aged 55-70, and 60 were old-old, aged 71-84. The groups differed in years of schooling with a mean of 13.5 years for the young-old and 12.4 years for the old-old. The groups did not differ on health ratings or socioeconomic status.

Subjects were administered a battery of memory and intelligence tests and the self-rated memory and depression scales as well as other measures not used in our study. People were tested in groups from 10 to 30.

The LISREL procedure (Joreskog & Sorbom, 1981) was used to analyze the data. LISREL examines linear structural relationships among factors, as mentioned earlier. Variables loading on these factors are listed in Table 1.

Table 1 About Here

Symptomatic Depression was measured by seven items from the Zung Depression Scale (Zung, 1965). This well-being/optimism factor was obtained by McGarvey, Gallagher, Thompson, and Zelinski (1982). The factor is fairly robust since similar factors have been obtained in four other studies. (Blumenthal, 1975; Rickels, Downing, Lipman, Fisher, & Randall, 1973; Steuer, Bank, Olsen, & Jarvik, 1980; Zung, 1967).

The Memory Performance factor was defined by scores on immediate and delayed recall as well as delayed recognition of a 20-item list of concerete nouns and by the total propositions recalled from a brief essay ("Parakeets:

Ideal Pets" adapted by Zelinski et al., 1980). Intellectual Ability was measured with four tests from the Adult Mental Abilities test battery, which is a revised form of the Primary Mental Abilities (PMA) (Thurstone & Thurstone, 1948). Recognition Vocabulary, Figure Rotation and Letter Series were adaptations of the PMA tests: Verbal Meaning, Space and Reasoning. Word Serie was an alterate form of Letter Series. Finally, four of the subscales from the Zelinski, Gilewski, & Thompson (1980) Metamemory Questionnaire loaded significantly on the Self-Reported Memory factor. These scales were overall rating of one's memory functioning, frequency of forgetting in a variety of situations, frequency of forgetting what one is reading, and effort made to remember in various situations where one has forgotten something.

The initial estimates of factor loadings, factor variances and unique variances were determined in samples independent of the one used for the LISREL analyses. This provided additional theoretical power for measuring the relationships among the factors. Specifics of the measurement analyses will not be discussed here.

Data were analyzed as covariances to retain level differences between age groups and between the different measures. LISREL provided a test for the overall fit of the model. LISREL parameter estimates divided by their standard errors are distributed as Student's t. A value of 1.96 or greater is significant at the .05 level. Comparison of parameters between age groups and models is made with standardized parameter estimates.

Results

Both the hypothesized and alternative models fit the data adequately, and virtually equally well, suggesting that the models did not differ from one another. Figure 2 depicts the relationships among the factors in both age groups for the hypothesized model.

Figure 2 About Here

Only two of the relationships were significantly different from zero in the young-old, i.e., the value of t was 1.96 or greater. There was a significant unidirectional path from depression to self-reported memory functioning and a significant covariance between intelligence and memory performance. For the old-old age group, only the covariance between intelligence and memory performance was significant.

Figure 3 illustrates a similar pattern of results for the alternative model.

Figure 3 About Here

There was a significant covariance between memory performance and intelligence in both age groups. The prediction of depression by self-reported memory was reliable only in the young-old age group. The results thus indicate that the relationship between self-reported memory and depression is reciprocal, since it was significant in both models. The reciprocal nature of the relationship is further supported by the fact that the path coefficients for both models are approximately the same size.

It should be noted that the covariance between intelligence and memory performance in the old-old sample is consistently larger than that covariance for the young-old. This occurs because the covariance is a residual after unidirectional prediction. Since there were no significant unidirectional predictions in either model for the old-old, there was more residual variance for the relationship between memory performance and intellectual ability.

Discussion

The results highlight three main points. These are: 1) the finding that symptomatic depression and self-reported memory were reciprocally related, but that neither memory performance nor intellectual ability were successful predictors of them, 2) the relationship between affect and cognition, and 3) the

value of the young-old vs. old-old age distinction. First the only significant relationships obtained in this study were those between two factors of objective ability, intelligence and memory performance, and two factors tapping subjective judgments of one's functioning, depression and self-reported memory functioning. Zelinski et al. (1980) found a sizeable association between memory performance and self-reported memory functioning using the same measures as this study. The discrepancy in findings is most likely due to differences in the nature of variables studied. Zelinski et al. (1980) examined the relationship between a subjective and an objective set of memory measures. We examined relationships between those measures, as well as a subjective measure of depression and an objective measure of intellectual ability. The greater variety of measures here apparently washed out the relationship between memory self-report and memory performance.

A second major point suggested by these results is the relationship between affect and cognition. While there is currently a major controversy on the nature of the relationship between depression and negative thoughts (e.g. Lewinsohn, Steinmetz, Larson, & Franklin, 1981), no conclusive evidence has determined whether these thoughts are an antecedent to depression or a consequence of it. The present results highlight the difficulty of this task. The bidirectional relationship obtained between depression and self-reported memory complaints points toward the reciprocal interaction between affect and thought. While Beck upholds the notion that thoughts are the ultimate cause of depression, even he has pointed to the reciprocal interaction that ensues once the first causal step is taken (Beck, 1967, 1976).

The final point brought home by this study is a reaffirmation of the distinction between the young-old and the old-old. The young-old age range is a one in which we see extensive individual differences in many areas of living: work, level of activity, health, leisure, life satisfaction, social and interpersonal involvement, and finances, for instance. It would not be surprising to find that psychological functioning is related to such differences

(Krauss, 1980). In contrast, old-old people appear to be a more homogenous group because of the commonalities of extreme old age: sensory loss, illness, poverty, and other difficulties. In addition, very elderly people represent a biased group because so many of their cohorts have died. Yet those who participate in psychological studies, even though a select few, still demonstrate decline in most abilities (Schaie, Note 2). Thus the old-old represent a very different population than the young-old.

To summarize, we found that the only significant relationship in our study, other than the covariance between memory and intelligence, was between symptomatic depression and self-reported memory in young-old people. The results suggest that self-report instruments such as the Metamemory Questionnaire may measure different latent variables in older adults who are not that old, compared to very elderly people. In addition, we have confirmed the findings of Kahn et al. (1975) who found that older people who complained of memory problems also happened to have high levels of symptomatic depression.

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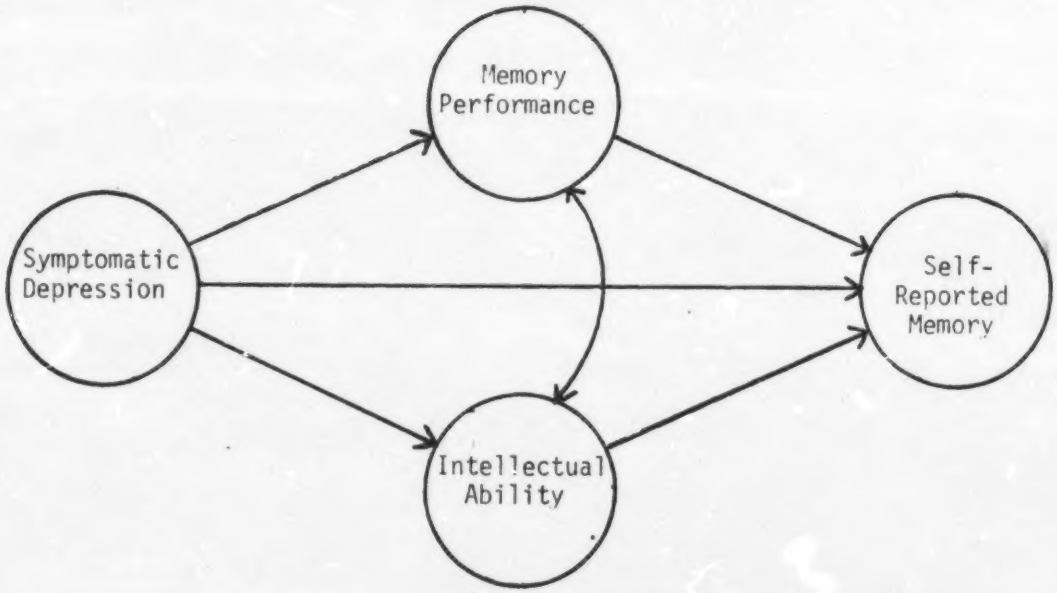
Table 1

Variables Loading on Each of the Four

Factors in the LISREL Models

Depression	Memory Performance
11. Mental Clarity	Immediate Recall
12. Activity	Delayed Recall
14. Hopefulness	Delayed Recognition
16. Decision-Making	Paragraph Recall
17. Self-Worth	
18. Meaningfulness	
20. Satisfaction	
Intelligence	**Self-Reported Memory**
Recognition Vocabulary	Overall Rating
Figure Rotation	Frequency of Forgetting
Letter Series	Freq. Forgetting in Reading
Word Series	Effort to Remember

Note. The numbers of the depression variables correspond to items on the Zung Depression Scale.



Hypothesized Model

Alternative Model

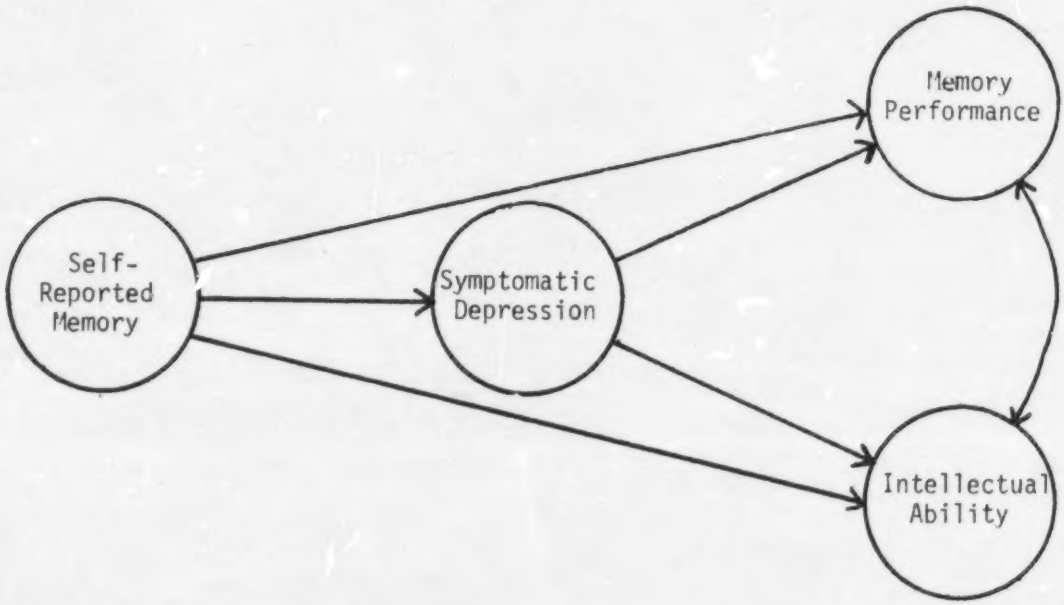
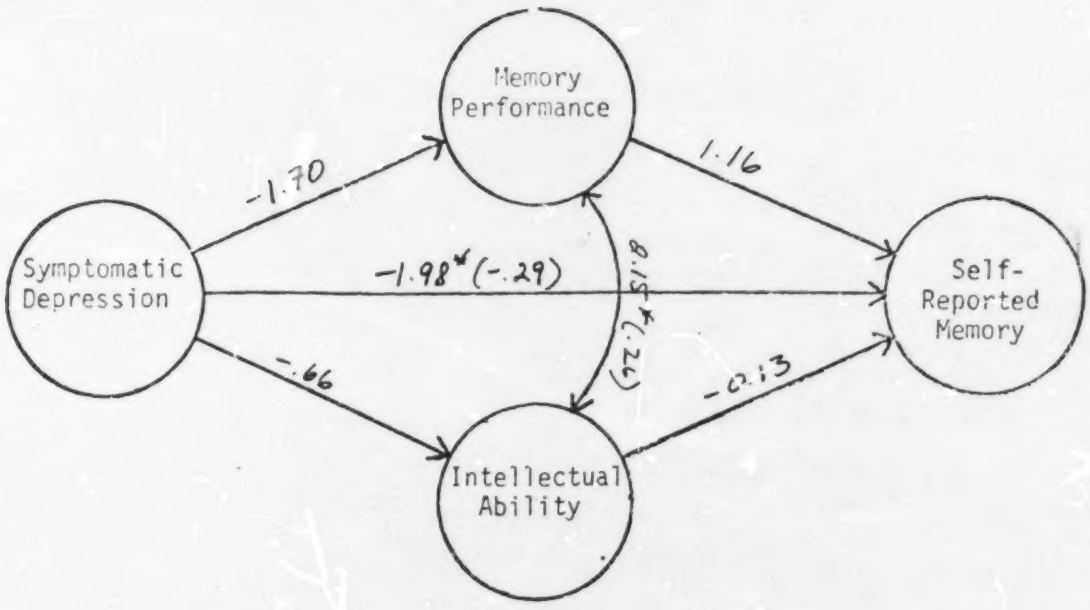
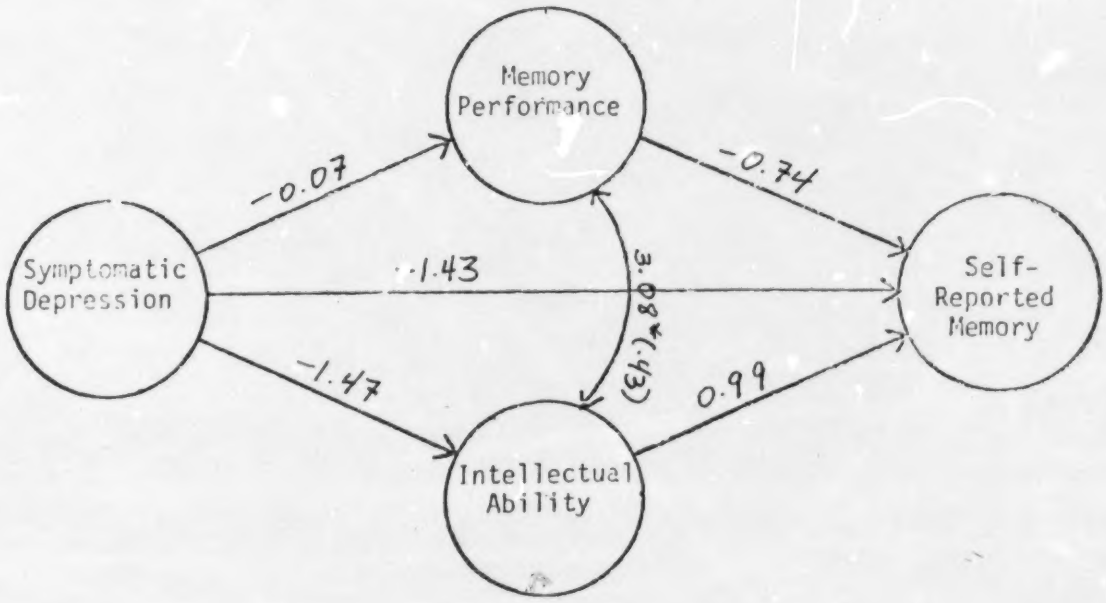


Figure 1. The hypothesized and alternative LISREL models.

Gilewski, M. J., & Zelinski, E. M. Memory complaint and mood in the elderly: A new wrinkle. APA, Washington, DC, 1982.

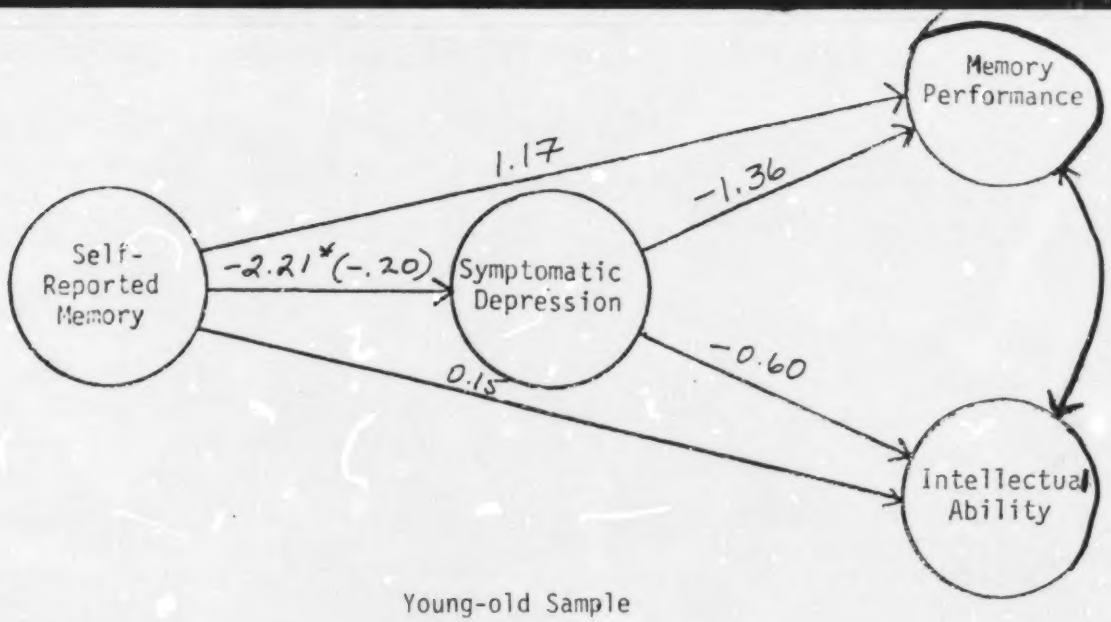


Young-old Sample

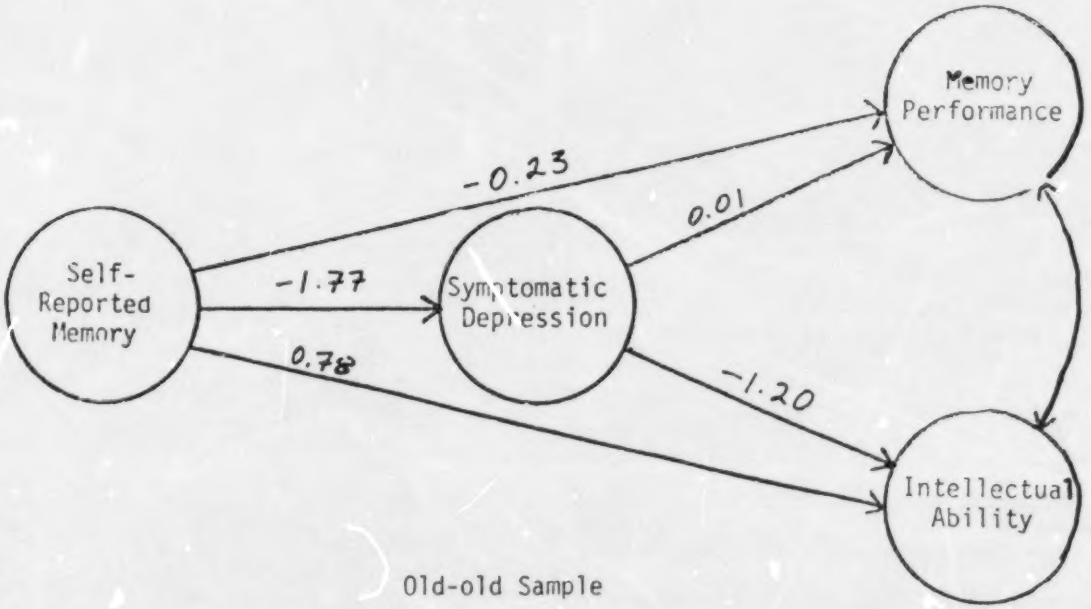


Old-old Sample

Figure 2. T-values of LISREL parameter estimates (path coefficients) for the hypothesized model, for young-old (top panel) and old-old (bottom panel) samples. Negative signs indicate inverse relationships between latent variables. Standard values for significant parameter estimates are given in parentheses for purpose of comparision across age and models.



Young-old Sample



Old-old Sample

Figure 3. T-values of LISREL parameter estimates (path coefficients) for the alternative model, for young-old (top panel) and old-old (bottom panel) samples. Negative signs indicate inverse relationships between latent variables. Standar values for significant parameter estimates are given in parentheses for purpose of comparison across age and models.